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TECHNICAL UNIVERSITY OF LISBON

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analysis at the world level***

WP 27/2010/DE/UECE

WORKING PAPERS

ISSN N° 0874-4548



What determines the export performance? A comparative analysis at the world level

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Abstract: We use constant market share (CMS) analysis to measure the variations in the market share of 82 of the world's principal exporting countries between 1995/97 and 2005/07. The results of this analysis serve to stress the importance of competitiveness in explaining export performance. Furthermore, the existence is observed of a spatial tendency, reflected in the fact that countries that are geographically close to each other tend to display a similar behavior with regard to market share evolution and the components into which the variation is broken down.

Key words: constant market share, competitiveness, export performance, international trade.

JEL Codes: C43, F10, F14.

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1. Introduction

The world economy has changed substantially over the past decade, with profound implications in respect of countries' conditions of competitiveness and the geographical and sectoral structures of world trade.

While the globalization of the economy has continued to accentuate in relation to international trade, expressed in the ever-greater interdependence among countries, with an increased intensity of international trade flows (Dreher et al., 2008), the world has witnessed the emergence of powerful new centers of economic activity, most notably the so-called BRIC group (Brazil, Russia, India and China). Another characteristic of the past decade has been the strong increase of raw material prices, including agricultural products and oil. Consequently, this has produced a significant change in terms of income and demand, with an obvious impact on trade flows (Skriner, 2010). Two sides of a third feature of the global trading environment during the first 10 years of the 21st century have been, on one hand, the continuation of the trend already under way in the preceding decades towards the reduction of trade protectionism; and, on the other hand, the formation of regional trading blocs.

In this context, improved export performance is today a high priority for firms competing in the economic environment and an indispensable determinant of a country's economic growth. In particular, we seek to establish whether export performance can be explained by a "pure" competitiveness effect, related to the exporter's price and non-price competitiveness, or by the export pattern of a country and/or the geographical orientation of the destination markets. The idea is that if a country is more (less) specialized in export products and destination markets where demand is weak (strong) in comparison to other products and markets, its aggregate export share will tend to decline (increase).

The purpose of decomposing the export performance of a large number of countries at the world level is to provide a comparative view of the contribution of three

components, described further below, to the increase or decrease of a country's export market share.

In addition, this analysis enables us to investigate whether a spatial pattern exists in the behavior of countries, specifically whether countries that are geographically close to each other reveal common tendencies in relation to the effects into which the evolution of trading competitiveness decomposes. Indeed, there are important factors that suggest the possible existence of a spatial tendency in countries' behavior in respect of their competitive position in international trade. A number of reasons can be put forward to support this hypothesis, including: (i) similar levels of development; (ii) a similar structure of costs for transporting goods to the various markets, making a similar geographical structure of exports more likely; (iii) similar geophysical conditions (climate, topography etc.) and access to transport infrastructures; (iv) similar factor endowments; (v) the possibility of membership of the same regional integration bloc, benefiting from common policies to promote competitiveness; and (vi) phenomena of spatial concentration of economic activity in a logic of center-periphery, as suggested by the new economic geography.

This note is organized as follows. Section 2 explains the methodology. Section 3 differentiates between competitiveness and the structural factors, i.e. geographical and sectoral specialization patterns, that drove the growth of export market share of countries at the world level in the last decade, specifically in the period between 1995-97 and 2005-2007. Section 4 concludes.

2. Methodology

We use a constant market share (CMS) analysis, with the aim of finding answers to the questions presented above in the Introduction. The CMS is a statistical decomposition of market share changes with a long tradition in applied international economics since the pioneering study of Tyszynski (1951).¹ This methodology disaggregates the trade data of a given country (or group of countries) and compares it

¹ See Richardson (1971) for significant reservations regarding shift-share analysis, primarily the fact that in the traditional CMS formulation, the product and the market effect are calculated in an asymmetric way. Depending on the calculation sequence of these two effects, one of them will include the interaction term. Therefore, results depend on the ordering of the structure effects. Recent applications of CMS include the ECB (2005), Cabral and Esteves (2006), Amador and Cabral (2008), Finicelli et al. (2008), Cafiso (2009) and Skriner (2010), among others.

with the trade flows of the rest of the world (Skriner, 2010). A substantial methodological debate during recent decades has produced a variety of versions of CMS analysis.² We follow the version proposed by Cabral and Esteves (2006), which is a slightly adjusted version of the formulation developed by Milana (1988).³

For each of the countries analyzed, we define X_{ji} as the exports sold by that country of product j to country i . For its part, M_{ji} represents the imports received by country i of product j . The market share of the country in question in terms of exports of product j to country i , MS_{ji} , corresponds to the ratio between these two variables:

$$MS_{ji} = \frac{X_{ji}}{M_{ji}} \quad [1]$$

The total market share is expressed as:

$$MS = \frac{\sum_j \sum_i X_{ji}}{\sum_j \sum_i M_{ji}} \quad [2]$$

Next, we can calculate the percentage variation in the total market share through its disaggregation into three effects: the market share effect (MSE), the combined structure effect (CSE) and the residual effect (RE).

The MSE captures the evolution of the share in each specific market weighted by the relative importance of that market in the total exports of the country. This component, by capturing the effective variations registered in each individual market, can be interpreted as an indicator of the economy's competitiveness. This effect can be expressed as:

$$MSE = \sum_j \sum_i \frac{\Delta MS_{ji}}{MS_{ji}} \frac{X_{ji}}{\sum_j \sum_i X_{ji}} \quad [3]$$

The combined structure effect (CSE), in its turn, captures the relative evolution of each destination market – translated into the variation in the relative weight of that market in the total imports – weighted by the relative importance of that market in the

² On this topic, see, for instance, Ahmadi-Esfahani (2006).

³ Milana (1988) aimed to find a satisfactory solution to the problems mentioned by Richardson (1971). The solution adopted is to calculate and present the interaction effect explicitly.

total market share of the country under analysis. Thus, the CSE measures the impact of the sectoral and geographical specializations on the variation of the country's market share:

$$CSE = \sum_j \sum_i \Delta \frac{M_{ji}}{\sum_j \sum_i M_{ji}} \frac{MS_{ji}}{MS} \quad [4]$$

Finally, the residual effect (RE) captures the cross-variations that permit the total decomposition of the market share variation, expressed as:

$$RE = \sum_j \sum_i \frac{\Delta MS_{ji}}{MS} \Delta \frac{M_{ji}}{\sum_j \sum_i M_{ji}} \quad [5]$$

Thus, the total variation of the market share can be represented as follows:

$$\frac{\Delta MS}{MS} = MSE + CSE + RE \quad [6]$$

The analysis can be deepened by means of a more refined decomposition of the CSE, which allows us to distinguish between the effect generated by the sectoral structure and that which arises from the geographical specialization. Consequently, the CSE can itself be broken down into three components: the sectoral structure effect (SSE), the geographical structure effect (GSE) and the mixed structure effect (MixSE).

The sectoral structure effect (SSE) captures, for each country, the portion of the total variation of the market share that results from the specialization by products of the exports. This is expressed as:

$$SSE = \sum_j \Delta \frac{M_j}{\sum_j M_j} \frac{MS_j}{MS} \quad [7]$$

in which:

$$M_j = \sum_i M_{ji} \quad [8]$$

and

$$MS_j = \frac{\sum_i X_{ji}}{M_j} \quad [9]$$

In an analogous manner, the geographical structure effect (GSE) captures the total variation of the market share that is due to the geographical specialization of the exports, expressed as:

$$GSE = \sum_i \Delta \frac{M_i}{\sum_i M_i} \frac{MS_i}{MS} \quad [10]$$

in which:

$$M_i = \sum_j M_{ji} \quad [11]$$

and

$$MS_i = \frac{\sum_j X_{ji}}{M_i} \quad [12]$$

The mixed structure effect (MixSE) results from the fact that the two previous effects are not independent. The calculation of this effect allows that:

$$CSE = SSE + GSE + MixSE \quad [13]$$

3. Results

The empirical analysis was conducted on 82 countries, based on data from Chelem, at a disaggregation level comprising 72 sectors. Table 1 presents the results obtained by grouping the countries according to the sign of the variation of the export market share over the period analyzed and the sign of each one of the three components described above – MSE, SSE and GSE.

Table 1: Decomposition of the market share variation, 1995/97 – 2005/07

		GSE > 0		GSE < 0	
		SSE > 0	SSE < 0	SSE > 0	SSE < 0
$\frac{\Delta MS}{MS} > 0$	MSE > 0	Bulgaria Ecuador Egypt Estonia Kazakhstan Latvia Libya Lithuania Peru Russian Federation Ukraine	Albania Austria Belarus Bosnia and Herzegovina Czech Republic Hungary Poland Romania Serbia and Montenegro Slovakia Slovenia Turkey	Bolivia Chile Mexico South African Union	Bel-Lux. Bangladesh Brazil China India Ireland Israel Netherlands Philippines Thailand Tunisia Vietnam
	MSE < 0	Algeria Croatia Nigeria	South Korea	Brunei Colombia Norway Saudi Arabia Venezuela	
$\frac{\Delta MS}{MS} < 0$	MSE > 0		Pakistan	Indonesia	Argentina Malaysia Paraguay Spain Uruguay
	MSE < 0	Cameroon Gabon	Finland Germany Greece Hong Kong Italy Japan Kyrgyzstan Macedonia Morocco	Australia Singapore Sweden United Kingdom	Canada Denmark France Iceland Ivory Coast Kenya New Zealand Portugal Sri Lanka Switzerland Taiwan United States

Source: own calculations based on Chelem.

It can be observed in Table 1 that of the 82 countries analyzed, 48 gained market share while 34 lost ground during the period studied. The MSE appears to be the factor exerting most influence on the market share variation. Effectively, among the countries showing market share gains, 39 registered a positive MSE, whereas only 9 present a negative value. On the other hand, in the case of those countries that lost market share, 27 present a negative MSE, while only 7 show a positive trend.

The geographical structure of exports (GSE) is also found to have a significant influence, reflecting the assumption that increasing export performances are more likely if oriented towards the most dynamic markets. Indeed, considering the cases with positive variation of market share, a positive geographical effect occurs in 27 cases, being negative in 21 cases. When we consider the countries registering a negative market share variation, the same influence is apparent. Among this group, 22 countries

present a $GSE < 0$ and only 12 countries benefit from the geographical structure of their exports.

As well as these general findings, the evidence displayed in Table 1 enables us to draw several interesting conclusions.

In the case of the more developed countries, most of them suffer from a shrinking of their export market share, due either to a negative contribution of the three effects considered (Canada, Denmark, France, New Zealand, Portugal, Switzerland, United States) or, at least, to the MSE and one of the other two effects.

However, the most notable result to emerge from Table 1 is evidence of the distinct existence of a spatial pattern in the behavior of countries in relation to their international competitive position. In this respect, we can highlight the case of the Central and Eastern European Countries, as they show an improvement in terms of market share, with $MSE > 0$ and $GEE > 0$. The decomposition of the export performance of the three non-European BRIC countries, China, Brazil and India, also presents a common tendency, as it reveals a favorable “pure” competitiveness effect (MSE) with $GEE < 0$ and $SSE < 0$, pointing to increased opportunities with a sectoral and geographical reorientation of their export patterns. This is related to the weight of the more traditional export sectors, notably textiles and other labor-intensive industries.

More specific analysis allows us to confirm the existence of a spatial pattern in the competitive behavior of the countries, reflected in the fact that not only do various countries that are geographically close present identically signed market share variations, but also the decomposition of these variations reveals an identical influence of each of the three effects considered. Among the groups of countries in which this trend can be observed, most prominent are: (i) Ecuador and Peru; (ii) Estonia, Latvia, Lithuania, Kazakhstan, the Russian Federation and Ukraine; (iii) Egypt and Libya; (iv) Austria, Czech Republic, Hungary, Poland, Bosnia and Herzegovina, Serbia and Montenegro, Romania, Slovakia, Slovenia and Albania; (v) Bolivia and Chile; (vi) Belgium-Luxembourg and Netherlands; (vii) Philippines, Thailand and Vietnam; (viii) Algeria and Nigeria; (ix) Colombia and Venezuela; (x) Argentina, Paraguay and Uruguay; (xi) Cameroon and Gabon; (xii) Germany and Italy; (xiii) Australia and Singapore; (xiv) Canada and United States; (xv) France and Switzerland. Thus, clear evidence is provided of the existence of a significant spatial influence on the trading behavior of the countries, as suggested in the Introduction.

4. Final remarks

An analysis based on CMS methodology was carried out on a sample of 82 of the world's most commercially important countries. According to the results obtained, it is possible to conclude that in general a positive export performance measured by the evolution of the export market share is related to a positive competitiveness effect. This effect seems to compensate in many cases a negative geographical and/or sectoral effect. However, when a country displays a negative export performance, in most cases the reason appears to be a combination of the three effects, showing structural problems in terms of firms' competitiveness, the specialization pattern and the geography of the destination markets.

The analysis also provides evidence of the growth of market share of many emerging countries in Asia and Central and Eastern Europe, despite the fact that most of them have a negative sector and /or geographical orientation, while many of the most developed countries are found in the group with shrinking market shares.

Furthermore, the evidence obtained has allowed us to confirm the clear existence of a spatial pattern with respect to the market share evolution of the countries, as well as the sign of the components into which this variation is decomposed.

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